

## Division Information

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Review Date:	09/03/2014
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## Attainment Status

PM10	Attainment
PM2.5	Attainment
SOx	Attainment
NOx	Attainment
VOC	Attainment
CO	Attainment

## Facility Information

Permit No.		14JA1198			
AIRs	County #	057	Jackson		
	Facility #	0037			
	Point #	002			
Facility Equipment ID					
Company Name: EE3, LLC					
Source Name:		Coalmont 3-13H			
Source Location:		SWSW Section 13, T7N, R81W			
SIC:		1311			
Elevation (feet)		8275			
X	New Permit (CP1)		Modification (Issuance #)		APEN Required/Permit Exempt
			Transfer of Ownership		APEN Exempt/Permit Exempt
Notes					

## Equipment Description

This source vents natural gas from:	a well head separator
Emissions from this source are:	routed to an open-flame flare

Natural gas venting from a well head separator. Emissions from this source are routed to an open-flame flare.

## Emission Calculation Method

EPA Emission Inventory Improvement Program Publication: Volume II, Chapter 10 - Displacement Equation (10.4-3)

$$Ex = Q * MW * Xx / C$$

Ex = emissions of pollutant x

Q = Volumetric flow rate/volume of gas processed

MW = Molecular weight of gas = SG of gas \* MW of air

Xx = mass fraction of x in gas

C = molar volume of ideal gas (379 scf/lb-mol) at 60F and 1 atm

Throughput (Q)	46 MMscf/yr	5214.6 scf/hr	3.88 MMscf/mo
MW	26.140 lb/lb-mol	0.001 MMscf/d	

	mole %	MW	lbx/lbmol	mass fraction	E	lb/hr	lb/yr	tpy
Helium	0.04	4.0026	0.002	0.000	Helium	0.0	193	0.10
CO2	1.42	44.01	0.625	0.024	CO2	8.6	75323	37.66
N2	0.79	28.013	0.221	0.008	N2	3.0	26673	13.34
methane	63.5059	16.041	10.187	0.390	methane	140.2	1227813	613.91
ethane	13.3861	30.063	4.024	0.154	ethane	55.4	485035	242.52
propane	11.4988	44.092	5.0701	0.194	propane	69.8	611082	305.54
isobutane	1.4402	58.118	0.8370	0.032	isobutane	11.5	100884	50.44
n-butane	4.6282	58.118	2.6898	0.103	n-butane	37.0	324198	162.10
isopentane	1.0034	72.114	0.7236	0.028	isopentane	10.0	87213	43.61
n-pentane	1.1682	72.114	0.8424	0.032	n-pentane	11.6	101537	50.77
cyclopentane	0.1028	70.13	0.0721	0.003	cyclopentane	1.0	8689	4.34
n-Hexane	0.2090	86.18	0.1801	0.007	n-Hexane	2.5	21709	10.85
cyclohexane	0.0534	84.16	0.0449	0.002	cyclohexane	0.6	5417	2.71
Other hexanes	0.4173	86.18	0.3596	0.014	Other hexanes	4.9	43345	21.67
heptanes	0.1346	100.21	0.1349	0.005	heptanes	1.9	16257	8.13
methylcyclohexane	0.0359	98.19	0.0353	0.001	methylcyclohexane	0.5	4249	2.12
224-TMP	0.0001	114.23	0.0001	0.000	224-TMP	0.0	14	0.01
Benzene	0.0251	78.12	0.0196	0.001	Benzene	0.3	2363	1.18
Toluene	0.01	92.15	0.0092	0.000	Toluene	0.1	1111	0.56
Ethylbenzene	0.0005	106.17	0.0005	0.000	Ethylbenzene	0.0	64	0.03
Xylenes	0.0021	106.17	0.0022	0.000	Xylenes	0.0	269	0.13
C8+ Heavies	0.0478	124.241	0.0594	0.002	C8+ Heavies	0.8	7158	3.58

VOC mass fraction: 0.4239  
26.140

Total VOC Emissions (Uncontrolled) 667.8  
annual limit assuming 95% control 33.4  
monthly limit assuming 95% control (lb/mo.) 5671.5

Notes

Mole %, MW, and mass fractions from Damfino 2-6H gas analysis.

Emissions are based on 8760 hours of operation per year.

I calculated the average MW of C8+ based on the average MW on the analysis for the gas.

**Flaring Information**Equipment Description

Flare to combust produced gas until pipeline is available at this wellhead facility.

Manufacturer	Leed	
Model	EF 4"x25' STNLS	
Serial Number	20969	
Gas Heating Value	1359	Btu/scf
Throughput	62079.12	MMBtu/yr

Combustion emission factor source: [AP-42: Chapter 13.5](#)

0.068	lb NOX/MMBtu	0.37	lb CO/MMBtu
2.11	tpy NOX	11.48	tpy CO

**Emissions Summary**

Uncontrolled/PTE	2.11	tpy NOX
	11.48	tpy CO
Controlled	667.778	tpy VOC
	33.389	tpy VOC

	Uncontrolled Total (lb/yr)	Uncontrolled Total (TPY)	Operator emissions (Lb/yr)	Scenario A Reportable?	Controlled Total (lb/yr)	Controlled Total (TPY)	Operator emissions lb/yr
Benzene	2363	1.18	2360	Yes	118	0.059	118
Toluene	1111	0.56	1109	Yes	56	0.028	55
Ethylbenzene	64	0.03	64	No	3	0.002	3
Xylenes	269	0.13	268	No	13	0.007	13
n-hexane	21709	10.85	21678	Yes	1085	0.543	1084
224-TMP	14	0.01		No	1	0.000	0

Operator emissions are slightly off from what I calculated. I believe this is due to rounding issues within the calculations. Controlled are pretty much identical. I will accept Operator's emissions.

**Regulatory Applicability****AQCC Regulation 1**

This source is subject to the opacity requirements for flares in Section II.A.5: 'No owner or operator of a smokeless flare or other flare for the combustion of waste gases shall allow or cause emissions into the atmosphere of any air pollutant which is in excess of 30% opacity.'

**AQCC Regulation 2**

Section I.A applies to all emission sources. "No person, wherever located, shall cause or allow the emission of odorous air contaminants from any single source such as to result in detectable odors which are measured in excess of the following limits: For areas used predominantly for residential or commercial purposes it is a violation if odors are detected after the odorous air has been diluted with seven (7) or more volumes of odor free air."

**AQCC Regulation 3**

Part A:	An APEN is required for this source because uncontrolled VOC emissions exceed two tons per year in an attainment area.
Part B:	A permit is required for this source because uncontrolled VOC emissions from this facility exceed five tons per year in an attainment area.
	This source is not subject to Section III.D.2 (Minor Source RACT) because it is not located in a nonattainment area.
Is public comment required?	Public Comment Required